REMARKS/ARGUMENTS

Claims 1-4, 6, 10, 22 and 23 are pending in the present application. Claims 1, 2 and 4 were amended; and claim 7 was canceled. New claims 22 and 23 were added. Support for the claim amendments and the new claims can be found in the Specification, for example, on page 8, lines 9-16; page 12, lines 10-21; page 13, lines 13-19; page 16, lines 6-17; and page 16, line 28-page 17, line 2. Reconsideration of the claims is respectfully requested in view of the above amendments and the following comments.

I. 35 U.S.C. § 103, Obviousness

The Examiner has rejected claims 1-4, 6-7, and 10 under 35 U.S.C. § 103 as being unpatentable over Tsunoda et al., U.S. Patent Number 4,342,023 (hereinafter "Tsunoda") in view of Cranfill et al., U.S. Patent Number 7,242,784 (hereinafter "Cranfill"). This rejection is respectfully traversed.

In rejecting the claims, the Examiner states:

> Re claim 1, Tsunoda et al. disclose a method for intelligent audio output control (fig.1-3; col.2 line 8-12), the method comprising: receiving values for a set of input parameters (fig.1-2 wt (20); col.4 line 28-39) and receiving stored historical data, wherein the stored historical data comprises stored values for the set of input parameters and a stored audio output parameter value associated with the stored values for the set of input parameters <u>*("fig . 1-2 wt: (11); col .5 line 30-65, ; col. 4 line 45-57/ stored input data and corresponding precise output stored for specific input data see (col. 2 line 40-50) ")*</u> ; predicting a value for an audio output parameter of an audio system based on the received values for the set of input parameters and the stored historical data; <u>*("fig. 1-2 wt (1, 11); col. 4 line 50-56 /input data and corresponding wt stored data (Ram, memory) may be outputted")*</u>; and adjusting the audio output parameter for the audio system using the predicted value for the audio output parameter <u>*("fig. 1 (12) /output value according to specific input data (1) may be adjusted)")*</u> .
>
> While, Tsunoda et al. disclose of the above with input data corresponding with output data, However, He fail to disclsoe of the specific wherein the stored historical data comprises a plurality of data points, wherein each data point includes a value for each of the set of input parameters and the audio output parameter value associated with the set of input parameters and adjusting the audio output parameter for the audio system using the predicted value for the audio output parameter, wherein the step of predicting a value for an audio output parameter comprises one of receiving the plurality of data points and performing statistical analysis on the plurality of data points to predict the value for the audio output parameter; and identifying a closest data point within the plurality of data points and setting the predicted value for the audio output parameter to an audio output parameter value of the closest data point. But, Cranfill disclose of the dynamic control gain signal wherein the stored historical data comprises a plurality of data points, wherein each data point includes a value for each of the set of input parameters and the audio

output parameter value associated with the set of input parameters and adjusting the audio output parameter for the audio system using the predicted value for the audio output parameter, wherein the step of predicting a value for an audio output parameter comprises one of receiving the plurality of data points and performing statistical analysis on the plurality of data points to predict the value for the audio output parameter; and identifying a closest data point within the plurality of data points and setting the predicted value for the audio output parameter to an audio output parameter value of the closest data point (fig.1 wt (memory), fig.4-5, col.3 line 29-40, col.5 line 35-65/statistical interpolation with linear for input and output data point with closest data points) for the purpose of dynamically improving the audio gain so low input level could be heard. Thus, taking the combined teaching of Tsunoda et al. and Cranfill as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Tsunoda et al. by incorporating the wherein the stored historical data comprises a plurality of data points, wherein each data point includes a value for each of the set of input parameters and the audio output parameter value associated with the set of input parameters and adjusting the audio output parameter for the audio system using the predicted value for the audio output parameter, wherein the step of predicting a value for an audio output parameter comprises one of receiving the plurality of data points and performing statistical analysis on the plurality of data points to predict the value for the audio output parameter; and identifying a closest data point within the plurality of data points and setting the predicted value for the audio output parameter to an audio output parameter value of the closest data point for the purpose of dynamically improving the audio gain so low input level could be heard.

Office Action dated April 17, 2008, pages 2-5.

Claim 1, as amended herein, is as follows:

1. A method for intelligent audio output control, the method comprising:

periodically receiving values for each input parameter of a set of input parameters, wherein each input parameter affects environmental noise;

receiving stored historical data, wherein the stored historical data comprises stored values for each input parameter of the set of input parameters and a stored audio output parameter value associated with the stored values for each input parameter of the set of input parameters, wherein the stored audio output parameter is set by a user, and wherein the stored historical data comprises a plurality of data points, each data point comprising a stored value for each input parameter of the set of input parameters and the audio output parameter value associated with the stored values for each input parameter of the set of input parameters;

responsive to a value for one or more of the periodically received values for each input parameter changing, predicting a value for an audio output parameter of an audio system based on the received values for each input parameter of the set of input parameters and the stored historical data; and

adjusting the audio output parameter for the audio system using the predicted value for the audio output parameter, wherein the step of predicting a value for an audio output parameter comprises one of receiving the plurality of data points and performing statistical analysis on the plurality of data points to predict the value for the audio output parameter; and identifying a closest data point within the plurality of data points and setting the predicted value for the audio output parameter to an audio output parameter value of the closest data point.

The Examiner bears the burden of establishing a *prima facie* case of obviousness based on prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). The prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In determining obviousness, the scope and content of the prior art are... determined; differences between the prior art and the claims at issue are... ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or non-obviousness of the subject matter is determined. *Graham v. John Deere Co.*, 383 U.S. 1 (1966). "Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR Int'l. Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. Apr. 30, 2007). "*Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.* Id. (citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006))."

In the present case, the Examiner has failed to establish a *prima facie* case of obviousness because neither Tsunoda nor Cranfill nor their combination teaches or suggests all the claim limitations. For example, with respect to claim 1, neither Tsunoda nor Cranfill nor their combination teaches or suggests "periodically receiving values for each input parameter of a set of input parameters, wherein each input parameter affects environmental noise", "receiving stored historical data, wherein the stored historical data comprises stored values for each input parameter of the set of input parameters and a stored audio output parameter value associated with the stored values for each input parameter of the set of input parameters, wherein the stored audio output parameter is set by a user, and wherein the stored historical data comprises a plurality of data points, each data point comprising a stored value for each input parameter of the set of input parameters and the audio output parameter value associated with the stored values for each input parameter of the set of input parameters", or "responsive to a value for one or more of the periodically received values for each input parameter changing, predicting a value for an audio output parameter of an audio system based on the received values for each input parameter of the set of input parameters and the stored historical data."

Tsunoda is directed to a voice warning system for a vehicle in which the volume of the voice warning is automatically adjusted in accordance with the sound level within the vehicle. In Tsunoda, vehicle operating conditions such as vehicle speed, fuel tank level, windshield washer level and the like are monitored, and the driver is warned when a monitored condition reaches a predetermined level or threshold. A voice warning is then given to the driver, and the volume of the voice warning is adjusted to

compensate for the sound level within the vehicle. A microphone within the vehicle monitors the sound level, and produces a control signal C_n indicating an average noise level, and the volume of the warning is adjusted according to C_n so that the warning will be louder when the noise level is high.

The present invention, on the other hand, is directed to adjusting an audio output parameter in response to a change in one or more input parameters that affect environmental noise. In accordance with the present invention, values for a set of input parameters that affect environmental noise are periodically received, and responsive to a value for one or more of the periodically received input parameters changing, a value for an audio output parameter of an audio system is predicted based on the received values for the set of input parameters and stored historical data.

In rejecting claim 1, the Examiner refers to col. 5, lines 30-65 and col. 4, lines 28-39 and lines 45-57 of Tsunoda as disclosing receiving values for a set of input parameters and historical data. These portions of Tsunoda are reproduced below for the convenience of the Examiner:

> In FIG. 2, the numeral 20 denotes an input/output interface for a microcomputer, which also includes, for example, a signal level converter, and an A-D converter. In the same way as in the first embodiment, the on/off signal of an ignition switch 2 is input to the interface in addition to the speed signal S_v, fuel signal S_f, washer signal S_w. Moreover, in this embodiment, various additional signals are input to the interface such as an electronic controlled gasoline injection pulse signal S_e, automatic speed control signal S_a, BCD clock signal S_t, radiator liquid signal S_r, battery liquid signal S_b.

Tsunoda, col. 4, lines 28-39

> The numeral **11'** denotes a voice synthesizer using a linear prediction coding (LPC) system including three LSI units, a memory unit (ROM) **22**, a synthesizer unit **23** (oscillator, filters, and D-A converters), and a control unit or microcomputer **24**, which corresponds to the voice memory **11** in FIG. **1**. Control unit **24** is a microcomputer comprising a CPU for controlling all the operations, a memory (ROM) for storing programs and fixed data, a memory (RAM) for storing input/output data, a clock oscillator, etc., which can implement all the operations corresponding to the counter 7, the voice selector **10**, and the voice memory **11**, as explained in the first embodiment in FIG. **1**, using the method of time sharing.

Tsunoda, Col. 4, lines 45-57

> In this case, it may be possible to input the noise signal C_n transmitted from the noise sensor **13** to the microcomputer in the control unit **24** through the interface **20**, to store the noise level, and finally to determine the voice volume, taking into consideration all the other factors such as the degree of urgency of the information, and the sound volume as adjusted by driver preference in other audio equipment within the vehicle in addition to the detected noise level. In the above case, the control signal to determine the voice volume is directly output from the computer **24** to the electronic volume control **12**.
>
> In the second embodiment as in the first embodiment, different items of information on

> vehicle conditions can be indicated to the driver. These include, for example, the distance traveled based on a trip meter signal, the distance which may be traveled on the remaining fuel based on a fuel signal, the rate of fuel consumption based on a fuel signal and a trip meter signal, and an average vehicle speed based on a trip meter signal and a time interval signal, in addition to the vehicle speed based on a speed signal, the electronic controlled gasoline injection condition based on an EGI pulse signal, the automatic speed control device condition based on an ASCD signal, the time based on a BCD clock signal, the radiator coolant state based on a radiator signal, the amount of washer liquid based on a washer signal, the amount of remaining fuel based on a fuel signal, and the amount of battery electrolytic solution based on a battery signal, as shown in FIG. **2**.
>
> Further, it is desirable to provide a timer to allow the voice warning system to be operated for a while even after the ignition switch has been turned off.
>
> As described above, since the noise level within the passenger compartment is detected and the volume of the information on the vehicle operating conditions is adjusted in accordance with the noise level, it is possible to provide the driver with voice information at an appropriate sound level under any ambient noise conditions.

Tsunoda, Col. 5, lines 30-68.

Initially, Tsunoda does not disclose or suggest "periodically receiving values for each input parameter of a set of input parameters, wherein each input parameter affects environmental noise" as recited in amended claim 1. The various operating conditions that are monitored in Tsunoda, such as vehicle speed, fuel tank level, and windshield washer level are not conditions that affect environmental noise, and, in addition, values for these operating conditions are not periodically received as now required by claim 1. Although the sound level monitored by the microphone in Tsunoda may be a condition that affects environmental noise, this sound level is not received <u>periodically</u>, nor are values received for each input parameter <u>of a set of input parameters that affect environmental noise</u> as recited in the claim. The microphone only monitors one parameter – sound level.

In addition, Tsunoda does not disclose or suggest "receiving stored historical data, wherein the stored historical data comprises stored values for each input parameter of the set of input parameters and a stored audio output parameter value associated with the stored values for each input parameter of the set of input parameters, wherein the stored audio output parameter is set by a user, and wherein the stored historical data comprises a plurality of data points, each data point comprising a stored value for each input parameter of the set of input parameters and the audio output parameter value associated with the stored values for each input parameter of the set of input parameters." Although Tsunoda may disclose determining voice volume "taking into consideration all the other factors such as the degree of urgency of the information, and the sound volume as adjusted by driver preference in other audio equipment within the vehicle in addition to the detected noise level", the reference nowhere discloses or in any way suggests receiving historical data that comprises "stored values for <u>each input parameter of the set of input parameters</u> and a stored audio output parameter value associated with the stored values <u>for each</u>

input parameter of the set of input parameters" as now recited in claim 1. Again, the only input parameter in Tsunoda that affects environmental noise is the sound received by the microphone.

Yet further, Tsunoda does not disclose or suggest "responsive to a value for one or more of the periodically received values for each input parameter changing, predicting a value for an audio output parameter of an audio system based on the received values for each input parameter of the set of input parameters and the stored historical data" as now recited in claim 1. As indicated above, Tsunoda may disclose determining a sound volume of the voice warning based on the sound volume detected by the microphone, however, any such determination is not responsive to a value for one or more of the periodically received values for each input parameter changing as recited in claim 1. In Tsunoda, when a voice warning is required, the volume of the voice warning is selected based on the current sound volume detected by the microphone, and is not responsive to a change in the sound volume detected by the microphone.

For at least all the above reasons, Tsunoda does not disclose or suggest any of the claimed features of "periodically receiving values for each input parameter of a set of input parameters, wherein each input parameter affects environmental noise", "receiving stored historical data, wherein the stored historical data comprises stored values for each input parameter of the set of input parameters and a stored audio output parameter value associated with the stored values for each input parameter of the set of input parameters, wherein the stored audio output parameter is set by a user, and wherein the stored historical data comprises a plurality of data points, each data point comprising a stored value for each input parameter of the set of input parameters and the audio output parameter value associated with the stored values for each input parameter of the set of input parameters", or "responsive to a value for one or more of the periodically received values for each input parameter changing, predicting a value for an audio output parameter of an audio system based on the received values for each input parameter of the set of input parameters and the stored historical data" as recited in amended claim 1.

In rejecting claim 1, the Examiner acknowledges, and Applicants agree, that Tsunoda does not disclose wherein historical data comprises a plurality of data points and wherein each data point includes a value for each of a set of input parameters, or adjusting the audio output parameter using a predicted value in the manner recited in claim 1. The Examiner, however, cites Cranfill as disclosing these features. Applicants respectfully disagree.

Applicants respectfully submit that Cranfill does not supply the deficiencies in Tsunoda described in detail above with respect to amended claim 1. Cranfill is directed to a mechanism for controlling audio signal gain in a communication device such as a speakerphone. In Cranfill, a level of an input audio signal is determined, and the level is mapped against a table of predetermined gain targets to determine an appropriate gain target for that level. The gain targets are then applied to the audio signal.

Cranfill also does not disclose or suggest any of the claim 1 features of "periodically receiving values for each input parameter of a set of input parameters, wherein each input parameter affects environmental noise", "receiving stored historical data, wherein the stored historical data comprises stored values for each input parameter of the set of input parameters and a stored audio output parameter value associated with the stored values for each input parameter of the set of input parameters, wherein the stored audio output parameter is set by a user, and wherein the stored historical data comprises a plurality of data points, each data point comprising a stored value for each input parameter of the set of input parameters and the audio output parameter value associated with the stored values for each input parameter of the set of input parameters", or "responsive to a value for one or more of the periodically received values for each input parameter changing, predicting a value for an audio output parameter of an audio system based on the received values for each input parameter of the set of input parameters and the stored historical data."

Therefore, for at least all the above reasons, neither Tsunoda nor Cranfill nor their combination teaches or suggests all the claim limitations recited in claim 1, and the Examiner has not established a *prima facie* case of obviousness in rejecting claim 1. Claim 1, accordingly, patentably distinguishes over the cited art in its present form.

Claims 2-4, 6 and 10 depend from and further restrict claim 1 and are also not obvious over Tsunoda in view of Cranfill, at least by virtue of their dependency. In addition, these claims recite further features which are not disclosed or suggested by the cited art. For example, claim 4 depends from claim 1 and recites that the set of input parameters includes audio type, "wherein the audio type comprises one of a song, a song type, talking, and a commercial." Neither Tsunoda nor Cranfill nor their combination discloses or suggest receiving values for input parameters that comprise one of a song, a song type, talking, and a commercial. Claim 4, accordingly patentably distinguishes over the cited art in its own right as well as by virtue of its dependency. Claim 7 has been canceled.

Therefore, the rejection of claims 1-4, 6-7, and 10 under 35 U.S.C. § 103 has been overcome.

II. <u>New Claims</u>

Claims 22 and 23 have been added to more fully protect Applicants' invention. These claims depend from and further restrict claim 1, and patentably distinguish over the cited art both by virtue of their dependency and in their own right. For example, claim 22 recites that periodically receiving values for each of a set of input parameters comprises receiving the values for each of the set of input parameters every second. In Tsunoda, input parameters are not periodically received, and they are certainly not received every second. Claim 23 recites that the user comprises one of a plurality of users, and that a

different stored audio output parameter is set by each of the plurality of users. The subject matter of claim 23 is also nowhere taught or suggested by the cited references.

Claims 22 and 23, accordingly, are also allowable in their present form.

III. Conclusion

For at least all the above reasons, claims 1-4, 6, 10, 22 and 23 patentably distinguish over the cited art and this application is believed to be in condition for allowance. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,

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